

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A laser driving apparatus including: a laser; a laser driving circuit for supplying a drive current to said laser; and radio frequency current superimposing means for generating a radio frequency current and superimposing said radio frequency current on said drive current; comprising:

current monitoring means for monitoring said drive current;

optical detection means for detecting an optical output of said laser;

amplitude control means for controlling an amplitude of said radio frequency current to be superimposed on said drive current;

optical output control means for controlling said laser driving circuit to make said optical output of said laser at a constant level; and

control means for controlling said amplitude of said radio frequency current on the basis of current values of said drive current obtained by said current monitoring means at a plurality of said amplitudes of said radio frequency current obtained by said amplitude control means or detection values of said optical output of said laser obtained by said optical detection means at [[a]] said plurality of said amplitudes of said radio frequency current obtained by said amplitude control means.

Claim 2 (Currently Amended): The laser driving apparatus as claimed in claim 1, wherein:

[[a]]the plurality of said amplitudes of said radio frequency current are defined as two values including zero and non-zero.

Claim 3 (Currently Amended): The laser driving apparatus as claimed in claim 1,  
wherein:

said amplitude control means controls whether said radio frequency current is  
superimposed on said driving current or not, and

said control means obtains a difference between said driving current monitored when  
said radio frequency current is superimposed on said driving current and said driving current  
monitored when said radio frequency current is not superimposed on said driving current, and  
controls said amplitude of said radio frequency current on the basis of said difference as said  
current values of said drive current under the condition that said optical output of said laser is  
~~controlled~~ maintained at said constant level.

Claim 4 (Currently Amended): The laser driving apparatus as claimed in claim 3,  
wherein:

said control means controls said amplitude of said radio frequency current so as to  
make constant said difference between said driving current monitored when said radio  
frequency current is superimposed on said driving current and said driving current monitored  
when said radio frequency current is not superimposed on said driving current ~~constant~~.

Claim 5 (Currently Amended): The laser driving apparatus as claimed in claim 1,  
wherein:

said amplitude control means controls whether said radio frequency current is  
superimposed on said driving current or not, and

said control means obtains a difference between said optical output detected when  
said radio frequency current is superimposed on said driving current and said optical output  
detected when said radio frequency current is not superimposed on said driving current, and

controls said amplitude of said radio frequency current on the basis of said difference under the condition that said driving current is ~~controlled~~ maintained at said constant level.

Claim 6 (Original): The laser driving apparatus as claimed in claim 5, wherein:  
said control means controls said amplitude of said radio frequency current so as to make said difference between said optical output detected when said radio frequency current is superimposed on said driving current and said optical output detected when said radio frequency current is not superimposed on said driving current constant.

Claim 7 (Original): The laser driving apparatus as claimed in claim 1, further comprising:

temperature monitoring means for monitoring a temperature related to said laser,  
wherein:

said control means controls said amplitude of radio frequency current when a change in said temperature satisfies a predetermined condition.

Claim 8 (Currently Amended): An optical head apparatus including: an optical system; a laser for emitting laser light through said optical system; a laser driving circuit for supplying a drive current to said laser; and radio frequency current superimposing means for generating a radio frequency current and superimposing said radio frequency current on said drive current for reading information signal from a recording medium, comprising:

current monitoring means for monitoring said drive current;  
optical detection means for detecting an optical output of said laser;  
amplitude control means for controlling an amplitude of said radio frequency current to be superimposed on said drive current;

optical output control means for controlling said laser driving circuit to control said optical output of said laser at a constant level; and

control means for controlling said amplitude of said radio frequency current on the basis of current values of said drive current obtained by said current monitoring means at a plurality of said amplitudes of said radio frequency current obtained by said amplitude control means or detection values of said optical output of said laser obtained by said optical detection means at [[a]] said plurality of said amplitudes of said radio frequency current obtained by said amplitude control means.

Claim 9 (Currently Amended): The laser driving apparatus as claimed in claim 8, wherein:

[[a]]the plurality of said amplitudes of said radio frequency current are defined as two values including zero and non-zero.

Claim 10 (Currently Amended): The laser driving apparatus as claimed in claim 8, wherein:

said amplitude control means controls whether said radio frequency current is superimposed on said driving current or not, and

said control means obtains a difference between said driving current monitored when said radio frequency current is superimposed on said driving current and said driving current monitored when said radio frequency current is not superimposed on said driving current, and controls said amplitude of said radio frequency current on the basis of said difference under the condition that said optical output of said laser is ~~controlled~~maintained at said constant level.

Claim 11 (Currently Amended): The laser driving apparatus as claimed in claim 10, wherein:

said control means controls said amplitude of said radio frequency current so as to make constant said difference between said driving current monitored when said radio frequency current is superimposed on said driving current and said driving current monitored when said radio frequency current is not superimposed on said driving current-~~constant~~.

Claim 12 (Currently Amended): The laser driving apparatus as claimed in claim 8, wherein:

said amplitude control means whether said radio frequency current is superimposed on said driving current or not, and

said control means obtains a difference between said optical output detected when said radio frequency current is superimposed on said driving current and said optical output detected when said radio frequency current is not superimposed on said driving current, and controls said amplitude of said radio frequency current on the basis of said difference under the condition that said optical output of said laser is ~~controlled~~ maintained at said constant level.

Claim 13 (Currently Amended): The laser driving apparatus as claimed in claim 12, wherein:

said control means controls said amplitude of said radio frequency current so as to make constant said difference between said optical output detected when said radio frequency current is superimposed on said driving current and said optical output detected when said radio frequency current is not superimposed on said driving current-~~constant~~.

Claim 14 (Original): The laser driving apparatus as claimed in claim 8, further comprising:

temperature monitoring means for monitoring a temperature related to said laser, wherein:

said control means controls said amplitude of radio frequency current when a change in said temperature satisfies a predetermined condition.

Claim 15 (Original): The laser driving apparatus as claimed in claim 8, wherein:

said amplitude of said radio frequency current is controlled under control that said optical output control means controls said laser driving circuit to make said optical output of said laser at said constant level which is not greater than a reproduction power necessary for reading said information signal.

Claim 16 (Currently Amended): An information processing apparatus including a laser; a laser driving circuit for supplying a drive current to said laser; a radio frequency current superimposing means for generating a radio frequency current and superimposing said radio frequency current on said drive current; a lens system for reading and recording information signal for a recording medium; and servo control means for controlling said lens system; comprising:

current monitoring means for monitoring said drive current;

optical detection means for detecting an optical output of said laser; amplitude control means for controlling an amplitude of said radio frequency current to be superimposed on said drive current;

optical output control means for controlling said laser driving circuit to make said optical output of said laser at a constant level; and

control means for controlling said amplitude of said radio frequency current on the basis of current values of said drive current obtained by said current monitoring means at a plurality of said amplitudes of said radio frequency current obtained by said amplitude control means or detection values of said optical output of said laser obtained by said optical detection means at asaid plurality of said amplitudes of said radio frequency current obtained by said amplitude control means.

Claim 17 (Currently Amended): The laser driving apparatus as claimed in claim 16, wherein:

atthe plurality of said amplitudes of said radio frequency current are defined as two values including zero and non-zero.

Claim 18 (Currently Amended): The laser driving apparatus as claimed in claim 16, wherein:

said amplitude control means controls whether said radio frequency current is superimposed on said driving current or not, and

said control means obtains a difference between said driving current monitored when said radio frequency current is superimposed on said driving current and said driving current monitored when said radio frequency current is not superimposed on said driving current, and controls said amplitude of said radio frequency current on the basis of said difference under the condition that said optical output of said laser is ~~controlled~~ maintained at said constant level.

Claim 19 (Currently Amended): The laser driving apparatus as claimed in claim 18, wherein:

said control means controls said amplitude of said radio frequency current so as to make constant said difference between said driving current monitored when said radio frequency current is superimposed on said driving current and said driving current monitored when said radio frequency current is not superimposed on said driving current-~~constant~~.

Claim 20 (Currently Amended): The laser driving apparatus as claimed in claim 16, wherein:

said amplitude control means controls whether said radio frequency current is superimposed on said driving current or not, and

said control means obtains a difference between said optical output detected when said radio frequency current is superimposed on said driving current and said optical output detected when said radio frequency current is not superimposed on said driving current, and controls said amplitude of said radio frequency current on the basis of said difference under the condition that said drive current of said laser is ~~controlled~~maintained at a constant level.

Claim 21 (Currently Amended): The laser driving apparatus as claimed in claim 20, wherein:

said control means controls said amplitude of said radio frequency current so as to make constant said difference between said optical output detected when said radio frequency current is superimposed on said driving current and said optical output detected when said radio frequency current is not superimposed on said driving current-~~constant~~.

Claim 22 (Original): The laser driving apparatus as claimed in claim 16, further comprising:



temperature monitoring means for monitoring a temperature related to said laser,  
wherein:

said control means controls said amplitude of radio frequency current when a change  
in said temperature satisfies a predetermined condition.

Claim 23 (Original): The laser driving apparatus as claimed in claim 16, wherein:

said amplitude of said radio frequency current is controlled, while said optical output  
control means controls said laser driving circuit to make said optical output of said laser at  
said constant level which is not greater than a reproduction power necessary for reading said  
information signal.

Claim 24 (Original): The laser driving apparatus as claimed in claim 16, wherein:

said amplitude control means and said control means control said amplitude of said  
radio frequency current when said reading and recording said information signal is not  
executed.